

*請按順序作答

I. 選擇題：每題僅一個正確答案，每題2分，共20分 ※ 注意：請於試卷內之「選擇題作答區」依序作答。

1. Eutrophic are characterized by

- A. high oxygen content. B. cool temperatures. C. high nutrient levels.
D. deep and clear waters. E. low biological productivity.

2. When an organism becomes acclimated to a new environmental situation; it will generally involve

- A. physiological changes. B. genetic changes.
C. sociological changes. D. both physiological changes and genetic changes.
E. both genetic changes and sociological changes.

3. Which statement about organisms' "niches" is false?

- A. The niche summarizes environmental factors influencing growth, survival, and reproduction of a species.
B. The niche concept was developed by Joseph Grinnell and Charles Elton.
C. The "fundamental" niche refers to physical, but not biological, aspects of the environment.
D. Interactions such as competition and parasitism may restrict the size of an organism's niche.
E. In the laboratory, two species with identical niches are especially easy to maintain in a mixed culture.

4. Which of the following word pairs are mismatched?

- A. random distribution; aggressive interaction
B. clumped distribution; attraction to a common source
C. regular distribution; antagonistic behaviors
D. large scale distribution; substantial environmental changes
E. small scale distribution; insignificant environmental changes

5. Which of the following cannot be determined using a fecundity schedule combined with a life table?

- A. per capita rate of increase B. net reproductive rate
C. mean generation time D. dispersal rates
E. geometric rate of increase

6. A group of subpopulations living in spatially isolated patches connected by exchange of individuals among patches is called a(n)

- A. micropopulation. B. megapopulation. C. isopopulation.
D. allopopulation. E. metapopulation.

7. $dN/dt = r_{max}N [(K - N)/K]$ represents

- A. annual growth rate. B. geometric population growth.
C. exponential growth rate. D. logistic growth.
E. None of the choices are correct.

見背面

8. An annual plant when initially colonizing an area will probably demonstrate
- A. annual growth rate.
 - B. geometric population growth.
 - C. exponential growth rate.
 - D. logistic growth.
 - E. None of the choices are correct.
9. Which of the following environments for germinating seed is most likely to favor a plant species that makes many small seeds, compared to one that makes fewer larger seeds?
- A. nutrient limitation
 - B. competition from established plants
 - C. shade
 - D. deep burial in soil
 - E. disturbance
10. The principle of allocation states
- A. if an organism uses energy for one function it reduces the amount of energy available for other functions.
 - B. organisms have a tendency to select the smallest prey available rather than exert more energy in capturing larger prey.
 - C. organisms that build larger nests produce fewer offspring.
 - D. organisms have a tendency to allocate more time and energy to a single preferred offspring while neglecting others.
 - E. plants allocate their energy such that larger seedlings come from smaller seeds.

※ 注意：請於試卷內之「非選擇題作答區」依序作答，並應註明作答之部份及題號。

II. 解釋名詞：每題 4 分，共 32 分

1. Species diversity index
2. Keystone species
3. Intermediate disturbance hypothesis
4. n-dimensional hyper-volume niche
5. Competition mathematic model
6. Landscape ecology
7. Optimal foraging theory
8. Predator-Prey neutral cycle

III. 問答題：共 48 分

1. What factors can keep species interactions of competition and exploitation stabilized? (9 分)
2. What is "ecosystem"? Please give an example and explain the structure and interactions/links in it. (9 分)
3. 定義生態演替(succession)，列舉說明三種驅動生態演替的機制，並說明擾動(disturbance)在生態演替中所扮演的角色。(15 分)
4. 從土地利用型態(land transformation)、全球生物地質化學循環(biogeochemical cycle)、生物資源(biotic additions and losses)三方面各舉二例說明人類活動如何影響氣候和生物多樣性。(15 分)

試題隨卷繳回